AMENDMENTS TO THE SPECIFICATION:

Please add the following heading on page 1, after the title, as follows:

FIELD OF THE INVENTION

Please add the following heading on page 1 before paragraph [0002], as follows:

BACKGROUND OF THE INVENTION

Please replace paragraph [0002] on page 1 with the following amended paragraph:

Test leak units are used for calibrating leakage flow meters. A test leak unit comprises a container in which a volume of a test gas or a test gas mixture is kept at a controlled pressure. The chamber includes an outlet connected to a capillary or any other defined test leak leading into the ~~surrounding~~ surroundings. For pressure control purposes, the chamber comprises a membrane which is supported by a spring, and which, upon deflection, actuates a control valve which switches on and off a gas-supplying pressure source.

Please replace paragraph [0003] on page 1 with the following amended paragraph:

Hydrogen may not be used as a pure gas in test leak units due to its explosiveness. Therefore, normally an oxygen-free hydrogen/nitrogen mixture is used as a test gas mixture (forming gas). However, the membrane sealing the chamber of the pressure control valve is not gas-impermeable. It rather offers different ~~permeabilityies~~ permeabilities to different gases. Consequently, ~~the~~ hydrogen escapes more quickly from the chamber than nitrogen such that the nitrogen concentration in the chamber increases. Normally, the test gas mixture comprises 95 % N_2 and 5 % H_2. The hydrogen content can amount to up to 10 %. This leads to an explosion risk.

Please add the following heading on page 1 before paragraph [0004], as follows:

SUMMARY OF THE INVENTION

Please replace paragraph [0005] on page 1 with the following amended paragraph:

~~The method according to the invention is defined in claim 1.~~ According to the invention, a gas is selected as an "added gas" which has a permeation coefficient relative to the material of the membrane ranging between 50 % and 200 % of that of hydrogen.

Please add the following heading on page 2 before paragraph [0010], as follows:

BRIEF DESCRIPTION OF THE DRAWINGS

Please add the following heading on page 2 before paragraph [0013], as follows:

DETAILED DESCRIPTION

Please replace paragraph [0014] on page 3 with the following amended paragraph:

The pressure control volume 11 or the pressure control valve 13 is connected with a bypass capillary 16 which leads a bypass flow 17 into the ~~surrounding~~ surroundings for the purpose of ensuring a permanent flow through the pressure control volume 11 to prevent demixing.

Please replace paragraph [0015] on page 3 with the following amended paragraph:

Fig. 2 shows the pressure controller 20 to which the test gas mixture 10 is supplied. The pressure controller 20 comprises a chamber 21 into which the test gas mixture is introduced. This chamber is sealed with a membrane 22. The membrane 22 is made from an elastomeric material. ~~It~~ The membrane 22 is supported by a spring 23 which counteracts the pressure prevailing in the chamber 21. The pressure control valve 24 comprises a duct 25 for delivering the highly pressurized test gas mixture into the chamber 21. The outlet of the duct 25 is opened and closed by a movable valve element 26. Via a rod 27 defining a two-arm lever, the valve element 26 is connected with a coupling means 28 which connects one of the lever arms with the membrane 22. The deflection movements of the membrane 22 cause the pressure control valve 24 to be opened or closed. In this manner, a pressure corresponding to the force of the spring 23 is adjusted and maintained in the chamber 21.

Please replace paragraph [0016] on page 3 with the following amended paragraph:

Fig. 2 further shows the test leak outlet 30 which is connected with a leak rate-determining capillary (not shown) leading to the ~~surrounding~~ surroundings.

Please replace paragraph [0017] on page 3 with the following amended paragraph:

Further, a bypass capillary 31 is provided at the chamber 21, which bypass capillary permanently leads a leak flow into the ~~surrounding~~ surroundings.

Please replace paragraph [0019] on page 3 with the following amended paragraph:

The small dots depicted pictorially in Fig 2 represent the mixed-gas volume and the ~~bigger~~ larger dots represent the hydrogen molecules. The hydrogen molecules diffuse through the membrane 22 out of the chamber 21 and travel through the vent opening 34 into the ~~surrounding~~ surroundings.

Please replace paragraph [0020] on page 3 with the following amended paragraph:

The membrane 22 is a polymeric membrane. In one embodiment, the membrane ~~it~~ is made from polybutadiene-co-acrylonitrile (Perbunan 18). In another embodiment, the membrane ~~it~~ is made from 73/27 Perbunan.

Please replace paragraph [0021] on page 4 with the following amended paragraph:

The following table shows the permeation coefficient P for the stated membrane materials. In the table given below (from Yasuda, H., Stannet, V.: Polymer Handbook, J. Wiley & Sons, New York, 1975), the permeation coefficient P has the following dimension

Please replace paragraph [0022] on page 4 with the following amended paragraph:

Depending on the membrane material, the permeation coefficient P for hydrogen is 25.2 or 15.9. The gas to be added is selected such that its permeation coefficient ranges between 50 and 200 % of that of hydrogen. For this purpose, other gases which are not indicated in the table can also be used as added gases. Preferably, the stated range of the coefficient lies between 50 % and 150 %.

Please replace the heading on page 5 with the following rewritten heading as follows:

We Claim:

Please delete the heading in toto on page 6.

Please delete the title in toto on page 6.

Please delete the Abstract in toto on page 6 and replace with the following new Abstract:

Abstract:

For operating a hydrogen test leak unit including a chamber defined by a membrane, a test gas mixture of hydrogen and an added gas is used. The added gas has a permeation coefficient relative to the material of the membrane ranging between 50 % and 200 % of that of hydrogen. In this manner, demixing of the test gas mixture is limited and significant concentration variations in the chamber are prevented. Preferably, helium is used as added gas.